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one actually was, HERSCHEL'S drawing of 1805 would have been reproduced. It therefore appears to me that Mr. PICKERING'S interesting photograph is a sufficient explanation of the anomalous figure of *Saturn* described by HERSCHEL. E. S. H.

SCIENTIFIC VISITORS TO THE LICK OBSERVATORY.

Mrs. R. A. PROCTOR has made an extended visit to the Lick Observatory, which was utilized in examining the work of the various departments and in actually studying the principal celestial objects, with special reference to her courses of astronomical lectures, already prepared, and to the preparation of new ones.——We learn that we are also to have the pleasure of seeing Dr. M. WILHELM MEYER, of Berlin, and Mr. COMMON, of London, during the present year. A few such visits will go very far towards breaking up our present sense of physical isolation, which is the only drawback to life at Mt. Hamilton.——Mr. W. W. CAMPBELL, Instructor of Astronomy in the University of Michigan, proposes to spend his summer here in practice with some of the instruments. E. S. H.

THE CONSTANTS OF THE REPSOLD MERIDIAN-CIRCLE OF THE LICK OBSERVATORY.

The constants of the meridian-circle of the Lick Observatory were observed daily, with few exceptions, during the time from October, 1888, to May, 1889, under the supervision of Prof. SCHAEBERLE, in charge of the instrument. The total number of determinations amounts to about one thousand. The observations, together with the temperature, were represented by curves, and the entire material was discussed. The following laws represent the variations of the constants with the temperature during the period of observation:

1. The *variations in the instrument* are greatest when the shutters are open during the night.

2. The *collimation* is quite constant and almost independent of changes of temperature, but shows a systematic decrease of $0^s.002$ a month from December, 1888, to May, 1889.

3. The *level-constant* varies inversely with the temperature, a change of one degree in the latter producing a change of $0^s.025$ in the former. The level-constant increased systematically $0^s.005$ a month for the time from October, 1888, to February, 1889.

4. The reading of the *azimuth-mark* (mire) varies directly with the temperature for micrometer-head west.

5. The reading of the *setting of the south on the north collimator*

varies directly with the temperature, a change of one degree in the latter producing a change of $0^s.018$ in the former. Besides, the setting increased systematically about $0^s.010$ a month.

6. The reading of the *nadir-point* varies $\left\{\begin{smallmatrix}\text{inversely}\\ \text{directly}\end{smallmatrix}\right\}$ as the temperature for circle $\left\{\begin{smallmatrix}\text{east}\\ \text{west}\end{smallmatrix}\right\}$, a temperature change of one degree producing a change of $0''.15$ in the reading of the nadir-point.

7. The *flexure* is quite constant, its mean value being $+ 0''.16 \pm 0''.026$.

8. Cold and moist weather causes a separation of the piers; dry and hot weather, the reverse.

ARMIN O. LEUSCHNER.

LICK OBSERVATORY, March, 1890.

THE BOYDEN PREMIUM.

Mr. U. A. BOYDEN, of Boston, has deposited with the Franklin Institute of Philadelphia the sum of $1000, which will be awarded as a prize "to any resident of North America who shall determine by experiment whether all rays of light, and other physical rays, are or are not transmitted with the same velocity." The competition is to close on January 1, 1891. Particulars may be found in the advertising pages of the *Journal of the Franklin Institute.*

COMPARISON OF THE SENSITIVENESS OF THE EYE AND OF THE PHOTOGRAPHIC PLATE.

[BY A. C. RANYARD, F. R. A. S.]

"Sensitive as are the salts of silver in the dry-plates at present in use, they do not correspond in sensitiveness with the living matter of the retina, on which images of comparatively faint objects are continually being impressed and obliterated. When we look at a faint object, and the pupil is fully expanded, the eye may be compared to a camera with a focal length of about four times its aperture. With such a camera it would be useless to attempt to photograph objects illuminated by candle-light in a fraction of a second. Yet the eye will perceive a succession of such faintly illuminated objects in a small fraction of a second, as any one may satisfy himself by watching any quickly-moving objects illuminated by the light of a candle, or even by a much fainter light."—From *Knowledge*, June 2, 1890 (page 157).

CORRIGENDA.

Vol. II, page 99, lines 20–22: The order of the numbers *should be* 194, 248, 175, 143 *instead of* 143, 248, 194, 175. A. O. L.